

What is claimed is :

1. A process for preparing Y-branched carbon nanotubes comprising the steps of:

(a) loading a catalyst on a carbon nanotube carrier;

5 (b) pre-treating the catalyst-loaded carbon nanotubes to have the catalyst bonded tightly to the surface of carbon nanotubes; and

(c) performing a synthetic reaction of carbon nanotubes using the obtained catalyst-loaded carbon nanotubes.

10 2. The process according to claim 1, wherein the carbon nanotube carrier is single-wall or multi-wall carbon nanotubes, or carbon nanofibers with or without Y-branched structure.

15 3. The process according to claim 1, wherein the catalyst is selected from the group consisting of metals or metal compounds applicable to the preparation of Y-branched carbon nanotubes.

20 4. The process according to claim 1, wherein the catalyst is used as a form of metal per se, metal oxide, metal nitride, metal boride, metal fluoride, metal bromide, metal sulfide or the mixture thereof.

5. The process according to claim 1, wherein the catalyst is metal complex or metal alloy comprising at least one or more metals.

6. The process according to claim 1, wherein the step of loading a catalyst is carried out by impregnation or precipitation, sol-gel method, chemical vapor deposition, sputtering, evaporation, dispersing method or spraying
5 method.

7. The process according to claim 1 or 2, wherein the tight bonding between the catalyst and the surface of carbon nanotubes is accomplished by a chemical pre-treatment selected from the group consisting of oxidation,
10 reduction, hydrogenation, sulfidization and acid treatment, or a physical pre-treatment selected from the group consisting of compression, drying, absorption and high temperature treatment.

8. The process according to claim 1 or 2, wherein the
15 tight bonding between the catalyst and the surface of carbon nanotubes is caused by decomposition, damage or destruction of the surface of carbon nanotubes.

9. The process according to any one of claims 1 to 3, wherein the synthetic reaction is performed by using a
20 suspension in which the catalyst-loaded carbon nanotubes are dispersed in solvent.

10. The process according to claim 9, wherein the suspension additionally comprised a surfactant.

11. The process according to claim 10, wherein the

surfactant is selected from the group consisting of non-ionic, anionic, cationic, binary ionic surfactants, and carbohydrates, silicones and fluorocarbons.

12. The process according to any one of claims 1 to 3,
5 wherein the synthetic reaction is performed by a method selected from the group consisting of thermal heating, chemical vapor deposition(CVD), plasma method, laser ablation, and radio frequency(RF) heating.

13. Y-branched carbon nanotubes prepared by the process
10 according to any one of claims 1 to 12 characterized by having at least one or more Y-junctions.

14. Y-branched carbon nanotubes prepared by the process according to any one of claims 1 to 12 characterized by having multiple Y-junctions repeated twice or more.

15 15. A product selected from the group consisting of electrode, transistor, material for electronic product and structure reinforced polymer having the Y-branched carbon nanotubes according to claim 13 or claim 14.